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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,198	08/19/2002	Gurudas Samant	METAL 1287-WCG	9196

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EXAMINER	
COOKE, COLLEEN P	
ART UNIT	**PAPER NUMBER**
1754	

DATE MAILED: 06/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/030,198	SAMANT ET AL.	
	Examiner	Art Unit	
	Colleen P. Cooke	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 April 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) *13-15 and 17-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11,12 and 16* is/are rejected.

7)☒ Claim(s) *10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Election/Restrictions

This application contains claims 13-15 and 17-19 drawn to an invention nonelected with traverse in the reply filed 7/8/04. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-9, 11, 12, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (4221768) in view of Graf et al. (4810478) and Frey et al. (6117405).

With respect to claims 1, 5, 11, and 12, Inoue et al. teaches a catalyst for purifying exhaust and waste gases from boilers using heavy oils or coal or from combustion engines, which contain both sulfur and nitrogen oxides (Column 1, lines 7-24) in the temperature range from 150°C to 500°C (Column 5, line 47) using a reducing agents such as ammonia (Column 5, lines 23-48). Inoue et al. teaches that the catalyst can have any desired shape, including a honeycomb (Column 5, lines 19-22) and in one example teaches that the catalyst measures 160 mm in lateral side, 160 mm in vertical side and 450 mm in length with an intercell distance of 5 mm (Column 13, lines 9-12). This structure would inherently have at least 50% free opening

surface. However, Inoue et al. does not teach adjusting the gas flow in the free reaction space corresponding to the Froude numbers as claimed; nor does Inoue et al. teaches adding a free oxide, carbonate, or hydroxide of calcium, magnesium, sodium, or potassium to the exhaust gas prior to contacting the exhaust gas with a catalyst.

With respect to claims 1, 3, and 4, Graf et al. teaches a process for removing sulfur oxides and other gaseous pollutants from flue gases by means of a reactant such as sodium, potassium, calcium and/or magnesium as an oxide, hydroxide, or carbonate (see abstract) which range from 1 to 300 μm (see claim1), wherein the gas flow in the reactor is controlled according to the Froude number (Column 3, line 50 through Column 4, line 18), which it is noted discloses the same equation as that which is claimed, though different notation may be used (see also claim 4 of Graf et al.). Graf et al. teaches that the most preferred particle material is calcium hydroxide (Column 3, lines 1-5). It would have been obvious to modify the process of treating a gas with a catalyst as taught by Inoue et al. by including particles of sodium, potassium, calcium and/or magnesium as an oxide, hydroxide, or carbonate because Graf et al. teaches that these particles serve as useful reactants in this process. It also would have been obvious to modify the process of treating a gas with a catalyst as taught by Inoue et al. by controlling the reactor gas flow as taught by Graf et al. because both references are drawn to the treatment of similar exhaust gases and Graf et al. teaches that the process can be adapted easily to use with any plant (Column 5, line 65 through Column 6, line 24) and that the velocity, controlled according to the equation, should also be selected in dependence on the particles (Column 4, lines 22-25).

With respect to claim 1, Frey et al. teaches (see abstract and Figure 1) a process for removing nitrogen oxides from exhaust gases using ammonia and a catalyst (7) which also

includes the addition of a dry absorbent (17) to the gas stream prior to contact with the catalyst. Frey et al. further teaches that the dry absorbent can be an alkali or alkaline earth metal compound (Column 5, lines 35-39) and specifically mentions CaO and $NaHCO_3$ (Column 5, lines 49-50). It would have been obvious to modify the process of treating a gas with a catalyst as taught by Inoue et al. in view of Graf et al. by introducing the dry absorbent prior to contact with the catalyst because Frey et al. teaches that this method and that it provides a way to clean the waste gas comprehensively in a very cost-efficient manner (Column 5, lines 53-54; Column 3, lines 25-29).

With respect to claim 2 and 16, Inoue et al. teaches (see abstract); also Column 4, lines 27-45) that the catalyst may have titanium dioxide (C), and 1-70% catalytic oxide of at least one element selected from a group including V and W (B).

With respect to claims 6 and 7, Frey et al. teaches that the reducing agent may be ammonia or ammonia-containing substances which may be in aqueous form (Column 3, lines 20-24) and wherein the reducing agent is added (13a, 13b, 13c, 14) to the gas stream prior to entry into the reactor (7) at a temperature of 700-900°C (Column 4, lines 8-11, 25-27 and Figure 1). It would have been obvious to modify the process of treating a gas with a catalyst as taught by Inoue et al. by introducing aqueous ammonia-containing reducing agent into the gas stream prior to entry into the reactor because Frey et al. teaches that adding the reducing agent at such a point is still effective to reduce NOx and therefore accomplishes the goal of Inoue et al.

With respect to claim 8, Frey et al. teaches (see Column 5, lines 22-23 and Figure 1) that ammonia may be injected after the meter (5) which is after the addition of a dry absorbent (17) to the gas stream. It would have been obvious to modify the process of treating a gas with a catalyst

as taught by Inoue et al. by introducing the ammonia-containing reducing agent into the gas stream after the dry absorbent because Frey et al. teaches that adding the reducing agent at such a point relative to the absorbent is still effective to reduce NOx and therefore accomplishes the goal of Inoue et al.

With respect to claim 9, Graf teaches that the flue gas can be supplied to the reactor from the bottom (Column 6, lines 40-41 and the figure). It would have been obvious to modify the process of treating a gas with a catalyst as taught by Inoue et al., which is silent as to from where the exhaust gas enters the reactor, by having the exhaust gas enter the reactor from the bottom because Graf teaches that this is an arrangement know in the art, accommodated by the equipment available in the art, and is capable of producing the results desired by Inoue et al. with respect to removing pollutants from the gas.

Allowable Subject Matter

Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach or suggest the limitations of claim 10.

Response to Arguments

Applicant's arguments filed 4/6/06 have been fully considered but they are not persuasive.

The applicant first argues that Inoue et al. does not teach or suggest the capture of sulfur dioxide in the presence of catalysts. It is noted that the grounds of rejection clearly state that while Inoue et al. teaches treating and exhaust gas that does contain sulfur dioxide (see Column 1, lines 7-24) but that Inoue et al. does not teach adding a free oxide, carbonate, or hydroxide of calcium, magnesium, sodium, or potassium to the exhaust gas prior to contacting the exhaust gas with a catalyst. The sulfur dioxides are capture, both in the invention and in the prior art, with the free oxide, carbonate, or hydroxide of calcium, magnesium, sodium or potassium; thus the grounds of rejection, in stating Inoue et al. does not teach adding that material, obviously never asserted that Inoue et al. taught this feature. The grounds of rejection make it clear that Graf and Frey et al. are relied upon to meet this claim limitation. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The applicant next argues that the inventive catalysts "have no zirconium or SiO_2". This is not persuasive because these features are not claimed and the claim language is therefore open to these materials. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., no zirconium or silica) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The applicant points to several teachings of Inoue et al. (pages 8-9 of the remarks, 2nd,4th, and 5th paragraphs) but makes no arguments in relation to these teachings or the claim. The applicant cites portions of Inoue et al. but does not explain why these portions are cited, how/what they are intended to show, or how the teachings alone demonstrate some distinction over the claim limitations. Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections. The applicant further goes on to describe reactions in the reactor but it is noted that the particulars of these reactions are not commensurate in scope with the claims (e.g. no claims appears to require CaO).

Next, with respect to the teachings of Graf the applicant ragues that Graf does not teach a solid catalyst with flow passages. It is noted that the grounds for rejection do not rely upon Graf to teach this feature as it is already taught by the primary reference, Inoue et al. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The applicant argues that combining the teachings of Inoue et al. and Graf would require two reactors and a cooling tower between them. This is merely applicants' opinion or assertion and the applicant has provided no evidence to support this argument; in addition it is noted that the elected claims are drawn to a process, and not an apparatus. The examiner maintains that a proper combination of Inoue et al., Graf, and Frey et al. would result in the claimed invention.

The applicant further refers to carrying out the reaction in a single reactor "with the solid catalysts" [emphasis added]; it is noted that the claim requires **a** solid catalyst – not plural solid catalysts.

The applicant next argues that the prior art does not teach exhaust gas entering alternately from above or below. This language appears to correspond to the limitations of claim 10. Perhaps the applicant has failed to notice that claim 10 was indicated as allowable in the previous action for the very reason that the prior art does not appear to teach this limitation.

The applicant next argues, with respect to Frey et al., the tertiary reference in the grounds of rejection, that the catalyst of Frey et al. is for separating dust and has small openings. First, it is note dthat the teachings in Inoue et al., the primary reference, already meet the limitations which the applicant is arguing. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Second, it is also noted that the applicant is arguing based on only one embodiment of Frey et al., and that Frey et al. also teaches that the catalyst can be designed without the so-called "filter action" and should then have "wide free flow channels" (Column 4, lines 43-48).

The applicant next quotes a preferred embodiment of Frey et al. and argues that the embodiment requires three reactors. This argument is not persuasive for at least the following reasons. First, the teachings of Frey et al. are not limited to only this preferred embodiment. Second, Frey et al. is the tertiary reference in the 103 rejection made; as such, the entirety of the process and teachings of Frey et al. are not the grounds of rejection. Though Frey et al. is

interpreted in light of the full disclosure, the rejection only relies upon those teachings as cited and applied in the grounds for rejection above which are applied to the claim in combination with the other two references. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The applicant argues regarding dust content and the amount of ammonia used, but it is noted that neither of these features is claimed. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., dust content, amount of ammonia) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). It is further noted that Frey et al. is not relied upon to teach the addition of ammonia, even though Frey et al. does teach using ammonia, because this limitation is already met by Inoue et al., the primary reference in the rejection.

The applicant has failed to persuasively show how the claimed invention is not met by the proper combination of the three references as applied in the above grounds of rejection. It is also noted that the art as applied to the limitations regarding the Froude numbers and the equation claimed have not been argued by the applicant.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colleen P. Cooke whose telephone number is 571-272-1170. She can normally be reached Mon.-Fri. 9:00 am - 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, her supervisor, Stan Silverman can be reached at 571-272-1358. The official fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Colleen P. Cooke

Colleen P Cooke
Primary Examiner
Art Unit 1754